

CLAIMS:

1. A projection device for projecting an image comprising:

- an illumination means (1) having an entrance (13) for entering light from a light source,
- a polarization-selective mirror (3) for transmitting a first polarization component (42) of said light and reflecting a second polarization component (43),
- 5 - a display panel (4) having:
 - a dichroic filter means (9) for filtering colour components of said transmitted first polarization component (42), and
 - a controllable reflection means (6) for changing the state of polarization of said colour components depending on a control signal and for reflecting said filtered colour
- 10 - components back to said polarization-selective mirror (3), and
- a projection means (7) for projecting the image,

wherein said polarization-selective mirror (3) is adapted to reflect light of a changed state of polarization to said projection means (7) and for transmitting light of an unchanged state of polarization back to said illumination means (1).

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2. A projection device as claimed in claim 1, characterized in that said illumination means (1) comprises an entrance mirror (14) for reflecting light transmitted back from said polarization-selective mirror (3) back to said polarization-selective mirror (3).

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3. A projection device as claimed in claim 1, characterized in that said illumination means (1) comprises a quarter-wave film (18) mounted on the entrance mirror (14) to change the state of polarization of light reflected at said entrance mirror (14).

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4. A projection device as claimed in claim 1, characterized in that said illumination means (1) comprises reflective boundaries (19) for reflecting incident light without changing the light distribution.

5. A projection device as claimed in claim 1, characterized in that said illumination means (1) comprises a glass prism.

6. A projection device as claimed in claim 1, characterized in that said polarization-selective mirror (3) is made of two prisms (16, 17) carrying a reflective polarizer in between.

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7. A projection device as claimed in claim 6, characterized in that the reflective polarizer in between the two prisms (16, 17) is a wire grid polarizer.

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8. A projection device as claimed in claim 1, characterized in that said polarization-selective mirror (3) is integrated in a part of the illumination means (1), using a PBS prism.

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9. A projection device as claimed in claim 1, characterized in that a clean-up polarizer (23) is arranged in front of said projection means (7) to filter light having the wrong state of polarization.

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10. A projection device as claimed in claim 6, characterized in that an imaging prism (16) for reflecting light to the projection means (7), which is made of glass, has a low stress birefringence constant.

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11. A projection device as claimed in claim 1, characterized in that said display panel (4) comprises a projection area (4a) for reflecting light to the projection means (7) having a cross-sectional area which is smaller than the cross-sectional area of the illumination means (1) and a reflection area (4b) outside the projection area (4a) with a reflective layer for reflecting light back to the illumination means (1).

12. A projection device as claimed in claim 1, characterized in that said dichroic filter means (9) comprises a filter pattern which is made of cholesteric filters or of a stack of layers of interference filters.